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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/615,138	07/09/2003	Jung-Chien Chang	MR929-894	8092
4586	7590	09/22/2004	EXAMINER	
ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043			WILSON, CHRISTIAN D	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 09/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/615,138	<b>Applicant(s)</b> CHANG, JUNG-CHIEN	
	<b>Examiner</b> Christian Wilson	<b>Art Unit</b> 2824	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input checked="" type="checkbox"/> Other: <u>search history</u> .                  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 – 6 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikegami *et al.*

Regarding claim 1, Ikegami *et al.* (US 2003/0160339) discloses a method of packaging a thin integrated circuit comprising the steps of forming a circuit layer 7 with multiple sections [Figure 4] on a substrate 15, attaching an electronic element 9 to the circuit layer to connect two sections of the circuit layer [Figure 6], applying an encapsulant layer 11, and removing the substrate to expose the circuit layer [Figure 8].

Regarding claim 2, Ikegami *et al.* further teaches forming multiple dimples 16a, 16b in the substrate before forming the circuit layer, and forming protrusions 13 in the circuit layer after removing the substrate.

Regarding claim 3, Ikegami *et al.* further teaches a substrate with a flat top face and forming the circuit layer on the flat top face [Figure 4].

Regarding claims 4 – 6, Ikegami *et al.* further teaches bonding the electronic element by a metal wire 10.

Regarding claim 16, Ikegami *et al.* further teaches attaching a bottom electronic element under the exposed circuit layer and applying a bottom encapsulant layer [Figure 11].

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegami *et al.* in view of Oda *et al.*

Ikegami *et al.* teaches the limitations of claim 1 above, but does not discuss using a tin ball to mount the electronic element. Oda *et al.* (US 2003/053765) teaches mounting an electronic element with a tin ball to a metal substrate layer [0023]. It would have been obvious to one of ordinary skill in the art to use the tin balls of Oda *et al.* in the method of Ikegami *et al.* since tin balls provide a self-alignment process for mounting the electronic element.

5. Claims 10 – 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikegami *et al.* in view of Fjelstad.

Regarding claims 10 – 12, Ikegami *et al.* teaches the limitations of claim 1 above, but does not discuss bending the substrate to form a gull-winged lead frame. Fjelstad (US 6,583,444) teaches a gull-winged lead frame formed from a bent substrate [Figure 7K]. It would have been obvious to one of ordinary skill in the art to use the lead frame shape of Fjelstad in the method of Ikegami *et al.* since this shape provides a more accurate alignment configuration for LED devices [column 9, lines 60-65].

Regarding claims 13 – 15, Ikegami *et al.* teaches the limitations of claim 1 above, but does not discuss a light emitting diode (LED) as the electronic element with a step of forming an isolating layer to reflect light. Fjelstad teaches an LED device with an isolating layer 374. It would have been obvious to one of ordinary skill in the art to use an LED with an isolating layer in the method of Ikegami *et al.* since Fjelstad teaches that the method of Ikegami *et al.* provides a chip size package for the LED of Fjelstad with an improvement in the light reflecting properties of the package [column 5, lines 1-12].

### ***Conclusion***

6. A copy of the EAST search history is enclosed.
7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christian Wilson whose telephone number is (571) 272-1886. The examiner can normally be reached on weekdays, 7:30 AM to 4 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2824

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'CW', is positioned above the printed name of the patent examiner.

Christian Wilson, Ph.D.  
Patent Examiner  
Art Unit 2824

CDW